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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/622,294	07/18/2003	David Chown	30020591-02	7249

57299 7590 06/18/2009

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EXAMINER	
LIU, LI	

ART UNIT	PAPER NUMBER
2613	

NOTIFICATION DATE	DELIVERY MODE
06/18/2009	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No.	Applicant(s)	
	10/622,294	CHOWN, DAVID	
	Examiner	Art Unit	
	LI LIU	2613	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *26 March 2009*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,2,5,6 and 9-12* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,2,5,6 and 9-12* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *18 July 2003 and 23 November 2006* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

1. Applicant's arguments with respect to claims 1, 2, 5, 6 and 9-12 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 1, 5 and 9-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Muraguchi (US 5,432,874) in view of althaus (US 6,493,121).

1). With regard to claim 1, Muraguchi disclose a system (Figure 2) for converting first and second signals representative of payload (High Speed Electrical Signal in Figure 2, the video, audio, data signals etc. column 4 line 39-40) and supervisory (Low Speed Electrical Signal in Figure 2, control signal, etc., column 4, line 40-41) information, respectively, between an electrical format and a WDM aggregated optical format, the system comprising:

at least one first converter (the Electro-Optic Converter 8 in Figure 2) for converting said first signal between said electrical format and a first, disaggregated optical format (column 4, line 56-68) communicating payload information (High Speed Electrical Signal in Figure 2, the video, audio, data signals etc. column 4 line 39-40),

at least one second converter (the Electro-Optic Converter 9 in Figure 2) for converting said second signal between said electrical format and a second, disaggregated optical format (column 4, line 56-68) communicating supervisory information (Low Speed Electrical Signal in Figure 2, control signal, etc., column 4, line 40-41, and Figure 3), and

at least one optical WDM converter (the Multiplexer 10 in Figure 2) that converts said first and second signals between said first and second disaggregated optical formats and said WDM aggregated optical format (column 3 line 62-65, the multiplexer 10 multiplexes the two optical signals into WDM aggregated optical format),

wherein said at least one first converter, said at least one second converter and said at least one optical WDM converter are integrated to a single self-contained module (e.g., the light terminal 1 of the transmitting apparatus, Figure 2) by means of signal propagation paths that exempt from slices (Figure 2, no splices are used in the system; column 1 line 64 to column 2 line 9; and in column 3 line 48 to column 5 line 44. In Figure 2 and the detailed description, Muraguchi teaches an integrated transceiver; there is no discrete components having pigtails and needed to be spliced together. Therefore, in Muraguchi's system, splices as defined by the applicant are not needed).

Muraguchi teaches that all components of the transceiver are within the transceiver apparatus (1 or 2 in Figure 2); but, Muraguchi does not show the details of the multiplexing structure. Muraguchi does not expressly disclose: the WDM converter includes a beam splitter, and an optical connector aligned with the disaggregated optical format of at least one of the first converter and the second converter, the optical

connector arranged to receive a reflected disaggregated optical format from the remaining converter; wherein the beam splitter is aligned with an optical connector for conveying said first and said second signals in said WDM aggregated optical format.

However, Althaus discloses a transmitter module, in which at least one first converter (e.g., 10 in Figures 2b and 3b), at least one second converter (e.g., 30 in Figure 2b; column 8, line 8-10) and at least one optical WDM converter (e.g., 32 in Figure 2b) are integrated to a single self-contained module (the common module house of Figure 2, column 8 line 5-8); and the WDM converter includes a beam splitter (e.g., 32 in Figure 2b), wherein the beam splitter is aligned with a optical connector (e.g., the optical connector or "fiber connection" shown at "0" in Figures 2b and 3b, column 1 line 15, and column 2 line 52, "a fiber connection … disposed in a common housing") for conveying said first and said second signals in said WDM aggregated optical format; and the optical connector aligned with the disaggregated optical format of at least one of the first converter and the second converter (Figures 2b and 3b, the optical connector or "fiber connection" at "0" aligned with the disaggregated optical format of the first converter 10), the optical connector arranged to receive a reflected disaggregated optical format from the remaining converter (Figures 2b and 3b, the optical connector at "0" arranged to receive a reflected disaggregated optical format from the remaining converter, e.g., converter 30).

Althaus provides a compact transmission module having a multichannel capability for bidirectional optical message and signal transmission and also designed to save space and expand by adding further bidirectional channels in as simple a manner

as possible. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to apply the common housing and the structure of aligning the components as taught by Althaus to the system of Muraguchi so that a compact, reliable and simple structure module can be obtained and the common housing can also shield the harmful effects of a hazardous environment.

2) With regard to claim 5, Muraguchi and Althaus disclose all of the subject matter as applied in claim 1 above. And Muraguchi and Althaus further disclose wherein said beam splitter is arranged to define an optical signal reflection path between said second converter and optical connector (e.g., Althaus: the beam splitter is arranged to define an optical signal reflection path between the second converter 30 and optical connector “fiber connection 0”).

3). With regard to claim 9, Muraguchi and Althaus disclose all of the subject matter as applied to claim 1 above. And Muraguchi and Althaus further disclose wherein said first converter and said second converter include laser sources (e.g., Muraguchi laser light and LED, column 3, line 58-62; Althaus: Figures 2b and 3b, TO lasers 10 and 30 etc) driven with said first and said second signals in said electrical format (High Speed or Low Speed Electrical Signals), respectively, and wherein said optical WDM converter includes a WDM combiner (Multiplexer 10 in Figure 1) to combine said first and said second signals in said first disaggregated optical format and said second disaggregated optical format (Figure 2) to produce said WDM aggregated optical format (multiplexed signals to fiber 3, Figure 2), the system thus comprising a transmitter

module (e.g., transmitting apparatus in link 1, Figure 2, column 1 line 65 or column 3 line 38-40).

4). With regard to claim 10, Muraguchi and Althaus disclose all of the subject matter as applied to claim 1 above. And Muraguchi further disclose wherein the optical WDM converter includes a WDM splitter (Demultiplexer 11 in Figure 2) for de-multiplexing the WDM aggregated optical format (inputted from fiber 6 in Figure 2) into a first disaggregated optical format (the Laser Light Signal to O/E Converter 12 in Figure 2) and said second disaggregated optical format (the Light Signal to O/E Converter 13 in Figure 2), and wherein said first converter and said second converter include photoelectric converters (Opto-Electro Converter in Figure 2) for converting said first disaggregated optical format and said second disaggregated optical format into said first and second signals in said electrical format (output High Speed Electrical Signal and Low Speed Electrical Signal, respectively, column 3 line 65 to column 4 line 3), the system thus comprising a receiver module (Figure 2, column 1 line 65 to column 2 line 2).

5). With regard to claim 11, Muraguchi and Althaus disclose all of the subject matter as applied in claim 1. And Muraguchi further disclose the system includes:

a pair of said first converters (8 and 12 in Figure 2) in the form of a first laser source (8 in Figure 2) and a first photoelectric converter (12 in Figure 2), respectively;

a pair of said second converters (9 and 13 in Figure 2) in the form of a second light source (9 in Figure 2) and a second photoelectric converter (13 in Figure 2), respectively; and

a pair of said optical WDM converters (10 and 11 in Figure 2), in the form of a WDM combiner (10 in Figure 2) and a WDM splitter (11 in Figure 2), respectively;

such that said first laser source and said second light source are arranged for converting a first pair of first and second signals representative of payload (High Speed Electrical Signal in Figure 2, the video, audio, data signals etc. column 4 line 39-40) and supervisory information signal (Low Speed Electrical Signal in Figure 2, control signal, etc., column 4, line 40-41), respectively, from said electrical format into a first pair of first disaggregated optical format (Laser Light Signal in Figure 2) and second disaggregated optical format signals (Light Signal in Figure 2) and said WDM combiner (10 in Figure 2) is adapted to convert said first pair of first and second disaggregated optical format signals into a first WDM aggregated optical format signal (the multiplexed signal to fiber 3 in Figure 2), and

wherein said WDM splitter (11 in Figure 2) is adapted to convert a second WDM aggregated optical format signal (Signals from fiber 6) into a second pair of first (the Laser Light Signal to O/E 12) and second (the Light Signal to O/E 13) disaggregated optical format signals, and said first photoelectric converter (12 in Figure 2) and said second photoelectric converter (13 in Figure 2) are adapted to convert said second pair of first and second disaggregated optical format signals into a second pair of first and second signals representative of payload (High Speed Electrical Signal in Figure 2, the video, audio, data signals etc.) and supervisory (Low Speed Electrical Signal in Figure 2, control signal, etc., column 4, line 40-41) information in said electrical format, the system thus comprising a transceiver module (Transmitting apparatus, Figure 2).

But, Muraguchi discloses that the second light source is a LED, not the laser light. However, since the laser source has a narrow band width and is widely used in the art, and Althaus teaches that the second light source can be a laser (the TO laser, column 8 line 9-10), it would have been obvious to one of ordinary skill in the art at the time the invention was made to replace LED with the laser diode so to increase the signal capacity and transmission rate.

4. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Muraguchi and Althaus as applied to claim 1 above, and in further view of Shigeta et al (US 2002/0064333).

Muraguchi and Althaus disclose all of the subject matter as applied in claim 1 above. Muraguchi further discloses wherein said first converter and said second converter have associated signal processing electronics to generate said first and said second signals representative of said payload and said supervisory information, in said electrical format (Figure 2, the High Speed Electrical Signal and Low Speed Electrical Signal are applied to the E/O Converters 8 and 9 in Figure 2, that is, the signal processing electronics must be present in the system so to generate the two electrical signals).

But, Muraguchi does not expressly disclose that the signal processing electronics is integrated to said single self-contained module.

However, Shigeta et al, in the same field of endeavor, discloses a processing electronics being integrated to a single self-contained module (e.g., Figure 17, the semiconductor lasers 74, the processing electronics or driver electronics 73, controller

and multiplexer are integrated in the transmitter package 79, [0114], and [0015]-[0018], [0123]; according to Shigeta et al, the package can be a “box-shape”, [0005] and [0009]).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to put the signal processing electronics within the transceiver module as taught by Shigeta et al to the system of Muraguchi and Althaus so that a compact transceiver can be obtained.

5. Claims 6 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Muraguchi and althaus as applied to claims 1 and 5 above, and in further view of Ventrudo et al (US 5,589,684).

Muraguchi and Althaus disclose all of the subject matter as applied in claims 1 and 5 above. But, Muraguchi and Althaus do not expressly disclose wherein a second focusing elements is interposed between said beam splitter and said second converter, and wherein a third focusing elements is interposed between said beam splitter and said first converter.

However, Ventrudo et al, in the same field of endeavor, discloses a transmission system in which a first focusing element (e.g., the focusing lens 21) is interposed between a beam splitter (19 in Figure 1) and a fiber, wherein a second focusing element (e.g., 16 in Figure 1) is interposed between the beam splitter and the second converter (e.g., 12 in Figure 1), and wherein a third focusing element (e.g., lens 15 in Figure 1) is interposed between said beam splitter and the first converter (e.g., 11 in Figure 1).

By using the focusing lens, the diverging optical radiation can be made "collimated" and signal loss can be reduced. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use the focusing lenses as taught by Ventrudo et al to the system of Muraguchi and Althaus so to put one focusing lens between the beam splitter and the second converter and another one between said beam splitter and the first converter, and the light beams can be projected or "collimated" to the beam splitter and the signal loss can be reduced.

Conclusion

6. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to LI LIU whose telephone number is (571)270-1084. The examiner can normally be reached on Monday-Friday, 8:30 am - 6:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ken Vanderpuye can be reached on (571)272-3078. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/L. L./
Examiner, Art Unit 2613
June 12, 2009

/Kenneth N Vanderpuye/
Supervisory Patent Examiner, Art Unit 2613